EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

Road Construction Segments

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STA. TO STA.	DITCH REQ.	OUTSLOPE
16 feet	12 feet	1A to 1D	0+00 to 11+40	YES	NO
16 feet	12 feet	1B to 1C	0+00 to 3+50	YES	NO
16 feet	12 feet	2B to 2C	0+00 to 5+00	YES	NO
16 feet	12 feet	2D to 2E	0+00 to 8+00	YES	NO
16 feet	12 feet	2F to 2J	0+00 to 14+30	YES	NO
16 feet	12 feet	2G to 2H	0+00 to 1+20	YES	NO
16 feet	12 feet	2M to 2N	0+00 to 10+70	YES	NO
16 feet	12 feet	2O to 2P	0+00 to 9+60	YES	NO
16 feet	12 feet	2R to 2S	0+00 to 3+40	YES	NO
16 feet	12 feet	4A to 4B	0+00 to 11+40	YES	NO
16 feet	12 feet	4C to 4D	0+00 to 3+40	YES	NO
16 feet	12 feet	5A to 5B	0+00 to 28+00	YES	NO
16 feet	12 feet	5C to 5D	0+00 to 9+10	YES	NO
16 feet	12 feet	5E to 5F	0+00 to 23+50	YES	NO
16 feet	12 feet	5G to 5H	0+00 to 4+30	YES	NO
16 feet	12 feet	5J to 5K	0+00 to 7+60	YES	NO
16 feet	12 feet	5L to 5M	0+00 to 13+00	YES	NO
16 feet	12 feet	6A to 6B	0+00 to 34+80	YES	NO
14 feet	DIRT	6C to 6D	0+00 to 1+20	NO	YES
16 feet	12 feet	7A to 7C	0+00 to 9+40	YES	NO
16 feet	12 feet	7D to 7F	0+00 to 8+60	YES	NO
16 feet	12 feet	7G to 7H	0+00 to 8+20	YES	NO
16 feet	12 feet	I2 to AA	0+00 to 14+40	YES	NO
16 feet	12 feet	S1 to S2	0+00 to 2+20	YES	NO

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

Road Improvement Segments

SUBGRADE WIDTH	SURFACED WIDTH	POINT TO POINT	STA. TO STA.	DITCH REQ.	OUTSLOPE
16 feet	12 feet	I1 to I2	0+00 to 66+50	YES	NO
16 feet	12 feet	I3 to 5A	0+00 to 19+70	YES	NO
16 feet	12 feet	I7 to 6A	0+00 to 10+00	YES	NO
16 feet	12 feet	I8 to I10	0+00 to 23+50	YES	NO
16 feet	12 feet	5D to 5L	0+00 to 13+70	YES	NO
16 feet	12 feet	I9 to 2R	0+00 to 6+35	YES	NO
16 feet	12 feet	LV1 to LV2	0+00 to 124+10	YES	NO
16 feet	12 feet	LV3 to LV4	0+00 to 14+00	YES	NO
16 feet	12 feet	LV5		YES	NO
16 feet	12 feet	LV6		YES	NO

CLEARING. This work shall consist of clearing, removing, and disposing of all trees, snags, down timber, brush, surface objects, and protruding obstructions within the clearing limits.

Where clearing limits have not been staked, the clearing limits shall extend 10 feet back of the top of the cutslope and 5 feet out from the toe of the fill slope, or as directed by STATE. Clearing debris shall not be placed or permitted to remain in or under any road embankment sections. Clearing debris shall not be left lodged against standing trees.

All danger trees, leaners, and snags outside the clearing limits which could fall and hit the road shall be felled.

GRUBBING. This work shall consist of the removal or digging out of stumps and protruding objects.

All stumps shall be completely removed within the limits of required grubbing. Stumps overhanging cutslopes shall be removed. Grubbing debris shall not be placed or permitted to remain in or under any road embankment sections. Grubbing debris shall not be left lodged against standing trees. Grubbing classifications are as follows:

New construction - From the top of the cutslope to the toe of the fill.

Improvements and reconstructions - 4 feet back from the shoulder of the subgrade or ditch, whichever is widest, or as marked in the field.

CLEARING AND GRUBBING DISPOSAL. Scatter through openings in the timber outside of the cleared right-of-way, except where end-haul is required. In areas where end-haul is required, clearing and grubbing debris shall be fully contained and hauled to a designated waste area.

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

EXCAVATION. Excavation and grading shall not be done when weather and/or ground conditions are such that damage will result to existing subgrade or cause excessive erosion.

Excavation shall conform to STATE-engineered lines, grades, dimensions, and plans when provided.

All suitable excavated material shall be used where possible for the formation of fills, shoulders, and drainage structure backfills. Embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials. All fills and drainage structure backfills shall be machine compacted according to the specifications in Exhibit B.

Unless road design plans show otherwise, all roads shall be on a balanced cross section, except when the slope is over 50 percent, the road shall be on full bench for the width specified.

Excess excavation shall not be sidecast where material will enter a stream course or where material will accumulate in areas deemed a high landslide hazard location by STATE.

ROAD WIDTH LIMITATIONS. PURCHASER shall obtain advance written approval from STATE to construct the road to a greater width than specified. Extra subgrade width shall be required for:

Fill Widening. Add to each fill shoulder 1 foot for fills 3 feet to 6 feet high; 2 feet for fills over 6 feet high.

Curve Widening. Widen the inside shoulder of all curves as follows: 400 divided by the radius of the curve equals the amount of extra width.

DRAINAGE

Ditch. Construct "V" ditch 3 feet wide and to a depth of 1 foot below subgrade. Subgrade shall be crowned at 4 to 6 percent.

Outslope. Road subgrade shall be outsloped at 4 to 6 percent.

TURNOUTS. Increase roadbed width an additional 8 feet for both subgrade and surfacing. Length shall be at least 50 feet, or as staked on the ground, plus 25-foot approaches at each end.

Location: Intervisible but not greater than 750 feet, and as marked in the field.

GRADING	Back Slopes	Fill Slopes
Rock	Vertical to 1/4:1	Not steeper
Common - side slopes 50% and over	1/2:1	than 1½:1
Common - side slopes less than 50%	3/4:1	
Common - turnpike (level) section	2:1	

Top of cutslope shall be rounded.

LANDINGS. Landings shall be constructed no less than 50 feet wide and no more than 70 feet wide. Surface is to be crowned for drainage, with general grade no more than 3 percent. Surface as shown on Exhibit B.

TURNAROUNDS. Increase subgrade width an additional 20 feet for a length of 20 feet at locations listed in Exhibit B, and/or as marked in the field.

SEASONAL WINTERIZATION. All unrocked roads or unfinished subgrades shall be waterbarred in accordance with specifications in Exhibit J, and blocked to vehicular traffic, prior to October 1, annually, and as directed by STATE.

EXHIBIT "B"

FOREST ROAD SPECIFICATIONS

GENERAL ROAD CONSTRUCTION SPECIFICATIONS

(1) Excavated Material. All suitable excavated materials from the road construction and alignment shall be utilized for road and fill construction, and hauled in where necessary. Waste materials shall be placed in designated waste areas. Fills shall be thoroughly compacted in accordance with Exhibit B.

(2) Geotextile Road Fabric. Install fabric in accordance with specifications in Exhibit F.

SPECIFIC ROAD CONSTRUCTION INSTRUCTIONS

Segment	Station	Work Description
4A to 4B	0+00 to 11+40	Install fabric in accordance to specifications in Exhibit F.
	8+20 to 10+20	Widen road 3 feet right.
5A to 5B	2+50 to 4+50	Widen road 3 feet left.
5C to 5D	0+00 to 9+10	Install fabric in accordance to specifications in Exhibit F.
5E to 5F	6+50 to 8+50	Widen road 3 feet right.
6A to 6B	20+20 to 21+20	Widen road 2 feet right.
7G to 7H	4+05 to 5+05	Widen road 2 feet left.
I2 to AA	0+00 to 14+40	Install fabric in accordance to specifications in Exhibit F.

EXHIBIT "B"

FULL CONTAINMENT AND END HAUL REQUIREMENTS

Point to Point	Station to Station	Waste Area Location
2A	0+00	1
2B to 2C	0+00 to 1+90	2
2F to 2J	5+00 to 6+50	3
4C to 4D	2+90 to 7+50	4
5E to 5F	12+00 to 14+50	5
I2 to AA	5+50 to 12+00	6

Full Containment and End-Haul General Requirements

Material shall not be intentionally side cast.

Clearing and grubbing debris shall be end-hauled.

Containment

Full containment: The amount of material lost over the outside edge of the road shall not exceed 6 inches in depth measured perpendicular to the natural ground slope. Pioneer excavation shall be removed by digging, loading, and hauling rather than by pushing and scraping methods.

Trees and stumps may have up to 12 inches of materials directly above them. Any amount of materials exceeding the containment requirements shall be removed by operator from the slope, by whatever means necessary, and end-hauled to a designated waste area.

Waste Area Location. Waste areas 1-6 are located on as shown on Exhibit A.

(1) South of Point 2A.

(2) Point 2C

(3) 2F to 2J, Station 0+50 to 1+50.

(4) South of Point 4B.

(5) 5E to 5F, Station 11+50.

(6) I2 to AA, Station 9+50.

Waste Area Treatment

Spread evenly and provide adequate drainage. Pile slash, stumps, and other clearing debris on top of waste area in a manner which facilitates disposal by burning, as directed by STATE.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(1) Roadside Brushing. Brush all roadside vegetation between Points I1 to I2, I3 to 5A, I8 to I10, and 5D to 5L, in according to specifications in Exhibit I.

(2) Culvert Replacement, Culvert Installation, Fill Reconstruction, and Fill Removal. Where fill reconstruction or culvert replacement is specified, fills shall be excavated to natural stream course levels. All woody debris encountered during fill excavation shall be removed. All waste materials shall be hauled to nearby waste areas and shall be uniformly sloped and compacted for drainage. Fill reconstruction backfill shall consist of select materials and may be obtained from borrow pits, as directed by STATE. Backfill materials shall be hauled in where necessary and thoroughly compacted in accordance with Exhibit B. Crushed rock shall be used for backfilling excavation trenches less than 3 feet deep. STATE may require the use of crushed rock for culvert bedding. Removed culverts shall be hauled to an approved refuse site off of STATE land. Apply geotextile fabric to fill reconstruction subgrades prior to rocking, in accordance with specifications in Exhibit F, and as directed by STATE.

(3) Additional Requirements for Type F Stream Fill Reconstruction. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. Modifications of the existing culvert geometry shall be required to allow free passage of fish, and shall consist of embedding and/or countersinking the culvert inlet and/or culvert outlet, development of the stream channel above the culvert inlet and/or below the culvert outlet, placement of excavated substrate materials inside the installed pipe barrel (invert), and/or the use of riprap rock to construct embedded dissipaters, stream pools, and for fill armor, as directed by STATE.

(4) Riprap Rock Use. Where rock is specified for fill armor, rock shall be placed and tamped at a 1½:1 slope, beginning at the fill toes. Where rock is used for an energy dissipater, rock shall be placed below the culvert outlet and embedded for a minimum of 3 feet, as specified in Exhibit H.

(5) Equipment. All excavation and riprap placement shall be performed using a minimum 1½ cubic-yard, track-mounted excavator.

(6) Drainage Ditches. Restore or construct ditchlines, including ditchouts, as directed by STATE. Clean out all culvert inlets and outlets for a 10-foot radius. Re-establish or construct culvert sediment basins. Waste materials from drainage ditches and sediment basins shall not be pulled across existing surfacing rock, but shall be placed in nearby waste areas and uniformly sloped and compacted for drainage, as directed by STATE. Damaged culvert inlets and/or outlets shall be repaired by opening them with a hydraulic jack, or cutting off the culvert end to allow for free passage of water at peak flow levels. Install a culvert marker at each newly installed culvert and at each existing culvert that is missing a marker that could be reached by a grader blade. Markers shall meet specifications in Exhibit C.

(7) Free Draining Fill Construction. Where free draining fill construction is required, clean 24"-6" riprap rock shall be hauled in and used for fill base construction to specified heights. 1½"-0" crushed rock shall be used for backfilling around culvert installations. Geotextile fabric (non-woven drainage fabric) shall be used for separation of free draining fill materials and common materials. Fabric shall meet specifications in Exhibit F.

(8) De-watering of the work site shall be accomplished prior to the removal of any additional fill material for the development of the culvert bed and stream channel. The work site shall be de-watered by the use of cofferdams temporary diversion ditches or drainage structures and/or damming and pumping.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

GENERAL ROAD IMPROVEMENT INSTRUCTIONS

(9) Subgrade Preparation and Application of New Surfacing Rock.

(a) Complete culvert installations, fill reconstruction, and after specified work, prior to the application of new surfacing rock.

(b) Cut out all chuckholed and/or washboarded sections from the existing surfacing.

(c) Apply required base and leveling rock, as directed by STATE.

(d) Process (grade and mix) the existing surface and add base rock. Provide for a crown of ½ inch per foot in road width and compact in accordance to Exhibit B.

(e) Upon completion of above required work, apply, process, and compact surfacing rocking according Exhibit B.

(10) Grass Seeding and Mulching. Apply seed and mulch to all exposed soils (including cut slopes, fill slopes, ditch lines, and waste areas) resulting from road improvements in accordance with Exhibit L.

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	0+00	Point I1.
	6+20	Install culvert marker.
	13+50	Ditchout right.
	14+50	Ditchout left.
	18+50	Ditchout left.
	19+50	Turnout right.
	21+60	Ditchout left.
	25+50	Junction, Point 4D.
	26+50	Junction, Point 4B.
	37+00	Install culvert marker.
	42+75	Point I3.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I1 to I2	47+00	Culvert replacement / fill reconstruction. Utilize 50 cubic yards of 6"-0" pit-run rock and 40 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock. Armor fill slopes utilizing 50 cubic yards of 24"-6" riprap rock. Apply 47 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	47+50	Culvert replacement / fill reconstruction. Utilize 50 cubic yards of 6"-0" pit-run rock and 40 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock. Armor fill slopes utilizing 40 cubic yards of 24"-6" riprap rock. Apply 47 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.
	58+10	Culvert replacement / fill reconstruction. Construct free draining fill base to a height of 5 feet. Then utilize common materials for a total fill height of 12 feet. Fill slope for free draining base shall be 1:1. Fill slope for common material shall be 1½:1. Utilize 270 cubic yards of 24"-6" riprap rock for free drain fill construction, and 60 cubic yards of 1½ "-0" crushed rock for culvert bedding and backfill, in accordance with specifications in Exhibit G. Develop the stream channel above the new culvert inlet for a minimum distance of 20 feet. Armor fill slopes utilizing 60 cubic yards of 24"-6" riprap rock. Apply 63 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 20 feet.
	60+70	Trim culvert inlet, install culvert marker.
	63+40	Junction, Point 5C.
	66+50	Point I2.
I3 to 5A	0+00	Point I3.
	16+10	Begin curve widening, 3 feet left.
	16+45	Ditchout right.
	17+90	Ditchout right.
	18+10	End curve widening, 3 feet left.
	19+70	Point 5A.
I7 to 6A	0+00	Point I7.
	6+00	Install culvert marker.
	10+00	Point 6A.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
I8 to I10	0+00	Point I8.
	9+80	Junction, Point 7G.
	22+20	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	23+50	Point I10.
5D to 5L	0+00	Junction, Point 5D
	2+60	Junction, Point 5E
	3+70	Ditchout left and right.
	4+50	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	13+70	Junction, Point 5L.
LV1 to LV2	0+00	Junction Cougar Mountain Road and Flagpole Ridge Road, Point I16.
	1+60	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	4+20	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock.
	4+80	Turnout right.
	7+90	Repair existing culvert inlet. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock.
	10+60	Armor side-slope on right below road with 80 cubic yards of 24"-6" riprap at a 1:1 slope.
	16+90	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock.
LV1 to LV2	22+20	Install culvert marker.
	26+40	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock.
	31+70	Ditchouts left and right.
	39+60	Ditchout right.
	43+30	Install culvert marker.
	58+10	Install culvert marker.
	63+90	Culvert replacement / fill reconstruction. Utilize 40 cubic yards of 1½"-0" crushed rock for culvert bedding. Construct energy dissipator utilizing 12 cubic yards of 24"-6" riprap rock. Armor fill slopes utilizing 60 cubic yards of 24"-6" riprap rock. Apply 63 cubic yards of 4"-0" crushed rock for base rock replacement. Finished subgrade width shall be 18 feet.

EXHIBIT "B"

ROAD IMPROVEMENT INSTRUCTIONS

SPECIFIC ROAD IMPROVEMENT INSTRUCTIONS

Segment	Station	Work Description
LV1 to LV2	66+60	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	95+00	Type F Stream Fill Reconstruction. The finished subgrade shall be 22 feet wide. The new culvert shall be installed at 0.0 percent to 2.0 percent gradient. The new culvert inlet shall be embedded deeper than the existing culvert inlet. Develop/excavate the upstream channel for a distance of 25 feet from the culvert inlet. The developed stream channel shall be a minimum of 5 feet in width. Developed stream banks shall be sloped at 2:1. Utilize 60 cubic yards 1½ "-0" crushed rock for culvert bedding and backfill. Utilize 60 cubic yards of 24"-6" riprap rock for fill armor.
	110+90	Install culvert. Utilize 20 cubic yards of 1½"-0" crushed rock for culvert backfill.
	124+10	Point LV2.
LV3 to LV4	0+00	Point LV3. Culvert replacement/fill reconstruction. Finished sub-grade width shall be 20 feet. The new culvert shall be installed 1.0 foot deeper than the existing culvert inlet. Developed stream banks shall be sloped at 2:1. Develop/excavate the upstream channel for a distance of 25 feet from the culvert inlet. Utilize 60 cubic yards 1½ "-0" crushed rock for culvert bedding, 95 cubic yards 4"-0" crushed rock for base rock replacement. Armor fill with 90 cubic yards of 24"-6" riprap rock. Construct energy dissipator utilizing 24 cubic yards of 24"-6" riprap rock.
	14+00	Point LV4.
LV5	0+00	Culvert replacement/fill reconstruction. Finished sub-grade width shall be 26 feet. The new culvert shall be installed 6.0 feet deeper than the existing culvert inlet. Develop/excavate the upstream channel for a distance of 25 feet from the culvert inlet. Utilize 70 cubic yards 1½"-0" crushed rock for culvert bedding, 95 cubic yards 4"-0" crushed rock for base rock replacement, and surface with 29 cubic yards 1½ "-0" crushed rock. Armor fill with 120 cubic yards of 24"-6" riprap rock. Construct energy dissipator utilizing 24 cubic yards of 24"-6" riprap rock.
LV6	0+00	Type F Stream Fill Reconstruction. Culvert replacement/fill reconstruction. Finished sub-grade width shall be 20 feet. The new culvert shall be installed at 0.0 percent to 2.0 percent gradient. The new culvert shall be embedded deeper than the existing culvert inlet. Developed stream banks shall be sloped at 2:1. Develop/excavate the upstream channel for a distance of 25 feet from the culvert inlet. Utilize 100 cubic yards 1½"-0" crushed rock for culvert bedding, 63 cubic yards 4"-0" crushed rock for base rock replacement, and surface with 19 cubic yards 1½"-0" crushed rock. Armor fill with 50 cubic yards of 24"-6" riprap rock. Construct energy dissipator utilizing 24 cubic yards of 24"-6" riprap rock.

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 1A to1D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to1D Volume (CY) per		0+00 to 11+40 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	11.40	570
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Landings	6"-0" Pit-run	1D	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			1A to1D					688
ROAD SEGMENT: 1B to 1C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	1B to 1C Volume (CY) per		0+00 to 3+50 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	3.50	175
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Landings	6"-0" Pit-run	1C	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			1B to 1C					271
ROAD SEGMENT: 2B to 2C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2B to 2C Volume (CY) per		0+00 to 5+00 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	5.00	250
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Energy Dissipator	24"-6" riprap	0+00	N/A	dissipator	12	dissipators	1	12
Landings	6"-0" Pit-run	2A, 2C	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			2B to 2C					442
ROAD SEGMENT: 2D to 2E				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2D to 2E Volume (CY) per		0+00 to 8+00 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	8.00	400
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24
Landings	6"-0" Pit-run	2E	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			2D to 2E					530

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 2F to 2J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2F to 2J		0+00 to 14+30		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	14.30	715
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Landings	6"-0" Pit-run	2I, 2J	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			2F to 2J					893

ROAD SEGMENT: 2G to 2H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2G to 2H		0+00 to 1+20		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	1.20	60
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24
Landings	6"-0" Pit-run	2H	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			2G to 2H					144
ROAD SEGMENT: 2M to 2N				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2M to 2N		0+00 to 10+70		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	10.70	535
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2N, 3A	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			2M to 2N					749
ROAD SEGMENT: 2O to 2P				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2O to 2P		0+00 to 9+60		
				Volume (CY) per		Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	9.60	480
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	2P	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			2O to 2P					634

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 2R to 2S				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	2R to 2S Volume (CY) per		0+00 to 3+40 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	3.40	170
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24
Landings	6"-0" Pit-run	2S	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			2R to 2S					254
ROAD SEGMENT: 4A to 4B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4B Volume (CY) per		0+00 to 11+40 Number of		
Base Rock	4"-0" Crushed		10	station	63	stations	11.40	718
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	11.40	217
Turnouts	4"-0" Crushed		10	turnout	28	turnouts	1	28
Turnouts	1 1/2"-0" Crushed		3	turnout	10	turnouts	1	10
Junctions	4"-0" Crushed		10	junction	36	junctions	2	72
Junctions	1 1/2"-0" Crushed		3	junction	24	junctions	2	48
Curve Widening	4"-0" Crushed	8+20-10+20	10	station	12	stations	2	24
Curve Widening	1 1/2"-0" Crushed	8+20-10+20	3	station	6	stations	2	12
Energy Dissipator	24"-6" Riprap		N/A	dissipator	12	dissipators	1	12
Total Rock for Road Segment:			4A to 4B					1,141
ROAD SEGMENT: 4C to 4D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	4C to 4D Volume (CY) per		0+00 to 3+40 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	3.40	170
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		3	junction	12	junctions	1	12
Landings	6"-0" Pit-run	4D	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			4C to 4D					298
ROAD SEGMENT: 5A to 5B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5A to 5B Volume (CY) per		0+00 to 28+00 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	28.00	1,400
Junctions	4"-0" Crushed		8	junction	36	junctions	2	72
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	4	88
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Curve Widening	4"-0" Crushed	2+50-4+50	8	station	12	stations	2	24
Energy Dissipator	24"-6" Riprap		N/A	dissipator	12	dissipators	1	12
Landings	6"-0" Pit-run	5B	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			5A to 5B					1,700

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 5C to 5D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5C to 5D Volume (CY) per		0+00 to 9+10 Number of		
Base Rock	4"-0" Crushed		10	station	63	stations	9.10	573
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	9.10	173
Turn Outs	4"-0" Crushed		10	turnout	28	turnouts	2	56
Turnouts	1 1/2"-0" Crushed		3	turnout	10	turnouts	2	20
Junctions	4"-0" Crushed		10	junction	36	junctions	2	72
Junctions	1 1/2"-0" Crushed		3	junction	24	junctions	2	48
Energy Dissipator	24"-6" Riprap		N/A	dissipator	12	dissipators	1	12
Total Rock for Road Segment:			5C to 5D					954
ROAD SEGMENT: 5E to 5F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5E to 5F Volume (CY) per		0+00 to 23+50 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	23.50	1,175
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	2	44
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	20	junctions	1	20
Curve Widening	4"-0" Crushed	6+50-8+50	8	station	12	stations	2	24
Landings	6"-0" Pit-run	5F	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			5E to 5F					1,403
ROAD SEGMENT: 5G to 5H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5G to 5H Volume (CY) per		0+00 to 4+30 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	4.30	215
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	30	junctions	1	30
Landings	6"-0" Pit-run	5H	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			5G to 5H					347
ROAD SEGMENT: 5J to 5K				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5J to 5K Volume (CY) per		0+00 to 7+60 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	7.60	380
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	30	junctions	1	30
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Landings	6"-0" Pit-run	5K	N/A	landing	80	landings	1	80
Total Rock for Road Segment:			5J to 5K					536

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 5L to 5M				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	5L to 5M Volume (CY) per		0+00 to 13+00 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	13.00	650
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	30	junctions	1	30
Junctions	1 1/2"-0" Crushed		N/A	junction	20	junctions	1	20
Landings	6"-0" Pit-run	6+10, 5M	N/A	landing	80	landings	2	160
Total Rock for Road Segment:			5L to 5M					882
ROAD SEGMENT: I2 to AA				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I2 to AA Volume (CY) per		0+00 to 14+40 Number of		
Base Rock	4"-0" Crushed		10	station	63	stations	14.40	907
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	14.40	274
Turnouts	4"-0" Crushed		10	turnout	28	turnouts	2	56
Turnouts	1 1/2"-0" Crushed		3	turnout	12	turnouts	2	24
Junctions	4"-0" Crushed		10	junction	24	junctions	2	48
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	2	24
Energy Dissipator	24"-6" Riprap		N/A	dissipator	12	dissipators	2	24
Total Rock for Road Segment:			I2 to AA					1,357
ROAD SEGMENT: S1 to S2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	S1 to S2 Volume (CY) per		0+00 to 2+20 Number of		
Base Rock	4"-0" Crushed		10	station	63	stations	2.20	139
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	2.20	42
Junctions	4"-0" Crushed		10	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	24	junctions	1	24
Stockpile Floor	6"-0" Pit-run		10					2,449
Total Rock for Road Segment:			S1 to S2					2,689
ROAD SEGMENT: 6A to 6B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6A to 6B Volume (CY) per		0+00 to 34+80 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	34.80	1,740
Turn Outs	4"-0" Crushed		8	turnout	22	turnouts	7	154
Turn Arounds	4"-0" Crushed		N/A	turnaround	24	turnarounds	1	24
Curve Widening	4"-0" Crushed	22+20 to 21+20	8	station	12	stations	1	12
Landings	6"-0" Pit-run	6B, 6E	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			6A to 6B					2,050

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: 6C to 6D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	6C to 6D Volume (CY) per		0+00 to 1+20 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	1.20	60
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Landings	6"-0" Pit-run	6D	N/A	landing	60	landings	1	60
Total Rock for Road Segment:			6C to 6D					156
ROAD SEGMENT: 7A to 7C				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	7A to 7C Volume (CY) per		0+00 to 9+40 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	9.40	470
Turn Outs	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Landings	6"-0" Pit-run	7B, 7C	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			7A to 7C					660
ROAD SEGMENT: 7D to 7F				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	7D to 7F Volume (CY) per		0+00 to 8+60 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	8.60	430
Junctions	4"-0" Crushed		8	junction	36	junctions	1	36
Turn Outs	4"-0" Crushed		8	turnout	22	turnouts	1	22
Landings	6"-0" Pit-run	7E, 7F	N/A	landing	60	landings	2	120
Total Rock for Road Segment:			7D to 7F					608
ROAD SEGMENT: 7G to 7H				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	7G to 7H Volume (CY) per		0+00 to 8+20 Number of		
Base Rock	4"-0" Crushed		8	station	50	stations	8.20	410
Turn Outs	4"-0" Crushed		8	turnout	22	turnouts	1	22
Junctions	4"-0" Crushed		N/A	junction	36	junctions	1	36
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Curve Widening	4"-0" Crushed	4+05 to 5+05	8	station	12	stations	1	12
Landings	6"-0" Pit-run	7H	N/A	Landing	60	Landings	1	60
Total Rock for Road Segment:			7G to 7H					576

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2 Volume (CY) per		0+00 to 66+50 Number of		
Surface Rock	1 1/2"-0" Crushed		6	station	38	stations	66.50	2,527
Turnouts	1 1/2"-0" Crushed		6	turnout	20	turnouts	9	180
Junctions	1 1/2"-0" Crushed		6	junction	24	junctions	2	48
Curve Widening	1 1/2"-0" Crushed		6	station	6	stations	10	60
Leveling Rock	1 1/2"-0" Crushed		N/A					330
Culvert Bedding	6"-0" Pit-run	47+00	N/A					50
Culvert Bedding	1 1/2"-0" Crushed	47+00	N/A					40
Energy Dissipator	24"-6" Riprap	47+00	N/A					12
Fill Armor	24"-6" Riprap	47+00	N/A					50
Base Rock Restoration	4"-0" Crushed	47+00	10	station	63	stations	0.75	47
Culvert Bedding	6"-0" Pit-run	47+50	N/A					50
Culvert Bedding	1 1/2"-0" Crushed	47+50	N/A					40
Energy Dissipator	24"-6" Riprap	47+50	N/A					12
Fill Armor	24"-6" Riprap	47+50	N/A					40
Base Rock Restoration	4"-0" Crushed	47+50	10	station	63	stations	0.75	47
Free Draining Fill Base	24"-6" Riprap	58+10	N/A					270
Culvert Bedding	1 1/2"-0" Crushed	58+10	N/A					60
Fill Armor	24"-6" Riprap	58+10	N/A					60
Base Rock Restoration	4"-0" Crushed	58+10	10	station	63	stations	1.00	63
Total Rock for Road Segment:			I1 to I2					3,987
ROAD SEGMENT: I3 to 5A				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to 5A Volume (CY) per		0+00 to 19+70 Number of		
Surface Rock	1 1/2"-0" Crushed		6	station	38	stations	19.70	749
Turnouts	1 1/2"-0" Crushed		6	turnout	20	turnouts	3	60
Curve Widening	1 1/2"-0" Crushed		6	station	12	stations	2	24
Leveling Rock	1 1/2"-0" Crushed		N/A					80
Total Rock for Road Segment:			I3 to 5A					913
ROAD SEGMENT: I7 to 6A				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to 6A Volume (CY) per		0+00 to 10+00 Number of		
Surface Rock	1 1/2"-0" Crushed		6	station	38	stations	10.00	380
Turnouts	1 1/2"-0" Crushed		6	turnout	20	turnouts	1	20
Curve Widening	1 1/2"-0" Crushed		6	station	12	stations	1	12
Junctions	1 1/2"-0" Crushed		N/A	junction	24	junctions	1	24
Leveling Rock	1 1/2"-0" Crushed		N/A					50
Total Rock for Road Segment:			I7 to 6A					486

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: I8 to I10				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	I8 to I10 Volume (CY) per		0+00 to 23+50 Number of		
Surface Rock	1 1/2"-0" Crushed		6	station	38	stations	23.50	893
Turnouts	1 1/2"-0" Crushed		6	turnout	20	turnouts	4	80
Curve Widening	1 1/2"-0" Crushed		6	station	12	stations	1	12
Junctions	1 1/2"-0" Crushed		N/A	junction	24	junctions	1	24
Leveling Rock	1 1/2"-0" Crushed		N/A					100
Turnarounds	4"-0" Crushed		N/A	TA	24	TAs	1	24
Culvert Backfill	1 1/2"-0" Crushed	22+20	N/A					20
Total Rock for Road Segment:			I8 to I10					1,153
ROAD SEGMENT: 5D to 5L				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	5D to 5L Volume (CY) per		0+00 to 13+70 Number of		
Surface Rock	1 1/2"-0" Crushed		6	station	38	stations	13.70	521
Turnouts	1 1/2"-0" Crushed		6	turnout	20	turnouts	1	20
Culvert Backfill	1 1/2"-0" Crushed	4+50	N/A					20
Leveling Rock	1 1/2"-0" Crushed		N/A					40
Total Rock for Road Segment:			5D to 5L					601
ROAD SEGMENT: I9 to 2R				**POINT TO POINT**		**Sta. to Sta.**		**TOTAL VOLUME (CY)**
Application	**Rock Size and Type**	**Location**	**Depth of Rock (inches)**	I9 to 2R Volume (CY) per		0+00 to 6+35 Number of		
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	6.35	121
Junctions	1 1/2"-0" Crushed		N/A	junction	30	junctions	1	30
Total Rock for Road Segment:			I9 to 2R					151

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: LV1 to LV2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	LV1 to LV2 Volume (CY) per		0+00 to 124+10 Number of		
Surface Rock	1 1/2"-0" Crushed		4	station	25	stations	124.10	3,103
Turnouts	1 1/2"-0" Crushed		4	turnout	12	turnouts	16	192
Junctions	1 1/2"-0" Crushed		N/A	junction	24	junctions	10	240
Leveling Rock	1 1/2"-0" Crushed		N/A					500
Culvert Backfill	1 1/2"-0" Crushed	1+60						20
Energy Dissipator	24"-6" Riprap	1+60						12
Culvert Backfill	1 1/2"-0" Crushed	4+20						20
Energy Dissipator	24"-6" Riprap	4+20						12
Energy Dissipator	24"-6" Riprap	7+90						12
Armor Slope	24"-6" Riprap	10+60						80
Culvert Backfill	1 1/2"-0" Crushed	16+90						20
Energy Dissipator	24"-6" Riprap	16+90						12
Culvert Backfill	1 1/2"-0" Crushed	26+40						20
Energy Dissipator	24"-6" Riprap	26+40						12
Culvert Bedding/Backfill	1 1/2"-0" Crushed	63+90	N/A					40
Energy Dissipator	24"-6" Riprap	63+90	N/A					12
Fill Armor	24"-6" Riprap	63+90	N/A					60
Base Rock Restoration	4"-0" Crushed	63+90	10	station	63	stations	1.00	63
Culvert Bedding	1 1/2"-0" Crushed	66+60						20
Culvert Bedding/Backfill	1 1/2"-0" Crushed	95+00	N/A					60
Fill Armor	24"-6" Riprap	95+00	N/A					60
Base Rock Restoration	4"-0" Crushed	95+00	10	station	63	stations	1.00	63
Culvert Backfill	1 1/2"-0" Crushed	110+90						20
Total Rock for Road Segment:			LV1 to LV2					4,653

ROAD SEGMENT: LV3 to LV4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	LV3 to LV4 Volume (CY) per		0+00 to 14+00 Number of		
Surface Rock	1 1/2"-0" Crushed		3	station	19	stations	14.00	266
Turnouts	1 1/2"-0" Crushed		3	turnout	10	turnouts	4	40
Leveling Rock	1 1/2"-0" Crushed		N/A					70
Junctions	1 1/2"-0" Crushed		N/A	junction	12	junctions	1	12
Culvert Bedding/Backfill	1 1/2"-0" Crushed	0+00	N/A					60
Energy Dissipator	24"-6" Riprap	0+00	N/A					24
Fill Armor	24"-6" Riprap	0+00	N/A					90
Base Rock Restoration	4"-0" Crushed	0+00	10	station	63	stations	1.50	95
Total Rock for Road Segment:			LV3 to LV4					657

EXHIBIT "B"

ROAD SURFACING

ROAD SEGMENT: LV5				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	LV5 Volume (CY) per		Number of		
Culvert Bedding/Backfill	1 1/2"-0" Crushed		N/A					70
Energy Dissipator	24"-6" Riprap		N/A					24
Fill Armor	24"-6" Riprap		N/A					140
Base Rock Restoration	4"-0" Crushed		10	station	63	stations	1.50	95
Surface Rock Restoration	1 1/2"-0" Crushed		3	station	19	stations	1.50	29
Total Rock for Road Segment:			LV5					357
ROAD SEGMENT: LV6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)
Application	Rock Size and Type	Location	Depth of Rock (inches)	LV6 Volume (CY) per		Number of		
Culvert Bedding/Backfill	1 1/2"-0" Crushed		N/A					100
Energy Dissipator	24"-6" Riprap		N/A					24
Fill Armor	24"-6" Riprap		N/A					50
Base Rock Restoration	4"-0" Crushed		10	station	63	stations	1.00	63
Surface Rock Restoration	1 1/2"-0" Crushed		3	station	19	stations	1.00	19
Total Rock for Road Segment:			LV6					256

ROCK TOTALS (CY) FROM FLAGPOLE RIDGE QUARRY					
ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"
28,579	1,066	0	15,109	12,404	0

ROCK TOTALS (CY) FROM COUGAR MOUNTAIN QUARRY					
ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"
4,309	0	4,309	0	0	0

ROCK TOTALS (CY) FROM MUNCE ROAD QUARRY					
ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"
256	74	0	63	119	0

TOTAL (CY)					
ROCK TOTALS (CY)	24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"
33,144	1,140	4,309	15,172	12523	0

Additional rock for curve widening is required and has been included in the volume estimates.

Roads shall be uniformly graded and approved by STATE prior to rocking. For typical cross section, see Forestry Department Drawing Nos. 351-C and 351-D at the Forestry Department district office.

EXHIBIT "B"

ROCK ACCOUNTABILITY

Subgrades must be approved by STATE prior to rocking. Rocking must be done only when weather conditions are acceptable to STATE, and must be suspended when muddy water could enter streams from runoff.

Rock accountability shall be determined by the following methods, as directed by STATE. STATE shall be given 24 hours' notice prior to rocking.

Rock Checking. All rock spreading shall be done only when a STATE representative is present. STATE shall issue a receipt for each load delivered, and rock shall be measured without allowance for shrinkage or shakedown during hauling. Total truck measure volume for each road segment shall be as shown on Exhibit B. Deliver at least 700 cubic yards per 8-hour shift, unless otherwise approved by STATE. A penalty of $10.00 for each 10 cubic yards which are not delivered during a single shift shall be billed, and payment shall be required prior to final acceptance of the project by STATE.

Depth Measurement. Rock shall be spread and compacted according to the depths specified in Exhibit B. Truck measure volumes are given, but shall not limit the amount of rock spread.

Depth shall be determined in the most compacted area of the surface cross section. If additional rock is required because of insufficient depth, it shall be added by truck measure to those areas that were slighted. The conversion from compacted yardage to truck yardage is 1.3 multiplied by the compacted yardage equals truck yardage.

The depth of compacted aggregates shall not vary more than 1 inch from the depth specified in Exhibit B. The average depth for each road segment shall be the specified depth or greater. Surfacing areas shall be staked by STATE.

Load Records. Notify STATE before spreading the rock and maintain a record of all rock delivered for spreading. Make the record available for STATE inspection. A report listing the amount of rock delivered the prior month must be submitted no later than the 15th of each month.

EXHIBIT "B"

COMPACTION AND PROCESSING REQUIREMENTS

Subgrade. Subgrade surfaces of the road segments listed below shall be graded and compacted prior to rocking. Compaction shall be accomplished by traveling all surfaces from shoulder to shoulder until visible deformation ceases, or in the case of a sheepsfoot roller, the roller "walks out." A minimum of 3 passes shall be made over the entire width and length of the road. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Construction and Road Improvement Segments	1

Fills. Embankments and fills shall be placed in (approximately) horizontal layers not more than 8 inches in depth. Each layer shall be separately, and thoroughly, compacted. Compaction equipment shall be operated over the entire width of each layer until visible deformation of the layers ceases or, in the case of a sheepsfoot roller, the roller "walks out." A minimum of 3 passes shall be made over the entire width and length of each layer. A pass is defined as traveling a fill layer in one direction and then back over that same layer again.

Placing individual rocks or boulders with more depth than the allowed layer thickness shall be permitted, provided the embankment will accommodate them. Such rocks and boulders shall be at least 6 inches below the subgrade. They shall be carefully distributed and the voids filled with finer material, forming a dense and compacted mass. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Construction and Road Improvement Segments	1 or 2 or 3; and 4

Crushed Rock. The rock shall be uniformly mixed and spread in layers on the approved roadbed. Each layer of crushed rock shall be moistened or dried to a uniform moisture content suitable for maximum compaction and compacted in layers not to exceed 8 inches in depth except where installation of road fabric is required. When more than 1 layer is required, each shall be shaped and compacted before the succeeding layer is placed. Any irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform. Each layer shall be compacted with a minimum of 3 passes over the entire width and length of the road. A pass is defined as traveling a road section in one direction and then back over that same section again. Compaction shall be accomplished by using one or more of the approved equipment options listed below:

ROAD SEGMENT	COMPACTION EQUIPMENT OPTIONS
All Road Construction and Road Improvement Segments	1

EXHIBIT "B"

COMPACTION EQUIPMENT OPTIONS

(1) Vibratory Rollers. The drum shall have a smooth surface, a diameter not less than 48 inches, a width not less than 58 inches, and a turning radius of 15 feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 VPM, corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be 7 tons at 1600 VPM. It shall be activated by a power unit of not less than 25 horsepower. The vibratory roller shall be self-propelled and operated at speeds ranging from 0.9 mile to 1.8 miles per hour, as directed by STATE.

(2) Tampingfoot Compactors. Tampingfoot or sheepsfoot compactors shall exert a minimum pressure of 250 pounds per square inch on the ground area in contact with the tamping feet. The compactor shall cover a minimum width of 60 inches per pass and weigh a minimum of 16,000 pounds.

(3) Rubber-Tired Skidders. A rubber-tired skidder weighing a minimum of 20,000 pounds shall be operated over the fill layers so that the entire surface comes into contact with the tires. Skidders with oversized tires (high floatation) are not acceptable for compaction.

(4) Vibratory Hand-Operated or Backhoe-Mounted Tamper. Vibratory hand held or hydraulic tampers shall be used for compaction of backfill around culverts. The tamper shoe dimensions shall be a minimum of 10" X 13" and capable of a centrifugal force of 2,250 pound.

EXHIBIT "C"

CULVERT SPECIFICATIONS

All culvert materials shall be furnished and installed by PURCHASER, unless otherwise specified in the contract. Culverts shall conform to the material and fabricating requirements of Sections 2410 and 2420 of the "Standard Specifications for Highway Construction" prepared by the Highway Division of the Oregon State Department of Transportation. All culverts shall be constructed with of double-walled polyethylene except for Culvert Nos. 27, 28, 29, 36, 38, 40, 41, and 42, which shall be constructed of aluminized steel, as specified on pages 3 and 4 of Exhibit C. Double-walled polyethylene pipe shall meet the requirements of AASHTO M-294-901, Type S. Corrugation types and shapes other than those meeting the above minimum Highway requirements, shall be approved in writing by STATE.

Culverts shall be located according to the alignment and grade as shown on the Plan and Profile, and/or as staked in the field, or as stipulated in special instructions.

The STATE Representative shall determine final culvert locations and stake the locations in the field prior to installation.

Culvert grade shall slope away from ditch grade at least 2 percent unless otherwise specified.

The foundation and trench walls for all culverts shall be free from logs, stumps, limbs, stones over 3 inches, and other objects which would dent or damage the pipe during installation or use. If tamping is required, the trench shall be excavated wide enough to permit working on each side of pipe. Bedrock shall be excavated as required to provide a uniform foundation for the full length of the culvert.

A bedding of granulated material or job-excavated soil shall be placed to provide a wide band of support and to transmit the load from above evenly over the entire length of the pipe.

Transporting of the pipe shall be done carefully. Dragging or allowing free fall from trucks or into trenches shall not be permitted. Damage to bituminous coating shall be repaired before the pipe is covered.

On new installations, joining shall be done with bands of like material and corrugations. Manufacturers' instructions shall be followed for prefabricated pipe assembly.

Backfill shall consist of granulated material or job-excavated soil free of stumps, limbs, rocks, or other objects which would damage the pipe.

Tamping is required as specified in Exhibit B and shall be done in 8-inch lifts, 1 pipe diameter each side of the pipe to 85 percent density or over, and to the minimum fill height as specified below.

Fill heights, if not shown on a road plan and profile, shall be in accordance with those shown in Drawing No. 2094, "Fill Height Tables," prepared by the Highway Division of the Oregon State Department of Transportation. Any deviation must be approved by STATE.

EXHIBIT "C"

CULVERT SPECIFICATIONS

Minimum height of cover over top of culvert to subgrade when road is to be rocked shall be as follows: 12" for aluminized steel culverts 18" to 36", 18" for aluminized steel culverts 42" to 96", and 12" for polyethylene culverts (add 6" for roads which will not be rocked). Minimum vertical cover for other steel designs shall be as specified by STATE.

Lengths of individual culvert sections shall be not less than 10 feet, unless otherwise provided for in special instructions.

The ends of each culvert shall be free of logs and debris which would restrict the free flow of water. Culverts in Type F streams must allow free passage of fish as provided in the Oregon Forest Practice Rules. The intake end of relief culverts shall be provided with a sediment catching basin 3 feet in diameter at the bottom. The outlet end of any culvert which would allow water to erode embankment soil into waters of the State shall be provided with a downspout or other approved slope protection device.

All coupling band designs shall be in accordance with the minimum requirements of the Highway Division (Drawing Nos. 2091-A and B), or as approved by STATE.

Culvert Nos. 29, 38, 40, 41, and 42 (CMPA al. Ctd.) shall have 3" x 1" corrugations.

Polyethylene culverts between 3" to 10" in diameter shall meet the requirements of AASHTO M-252-851. Polyethylene culverts between 10" to 36" in diameter shall be double walled and meet the requirements of AASHTO M-294-901, Type S.

The intake ends of culverts shall be marked by driving white fiberglass posts within 6 inches of the downgrade side. Posts shall be a minimum of 6 feet long, and be a minimum of 2½ inches in width, with the spade driven 2 feet into the ground.

Culvert Nos. 27, 28, 29, 36, 40, and 41 shall have 1:1 beveled inlets.

Culvert Nos. 38 and 42 shall have 1:1 step beveled inlets.

Tamping is required.

All removed culverts shall be hauled to an approved refuse site off of STATE land.

EXHIBIT "C"

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
1	18	50	1A to 1D	0+70
2	18	40	2B to 2C	0+00
3	18	30	2D to 2E	2+40
4	18	40	2F to 2J	4+50
5	18	30	2M to 2N	4+80
6	18	40	2O to 2P	0+00
7	18	30	2O to 2P	3+60
8	18	40	4A to 4B	6+55
9	18	40	4A to 4B	9+55
10	18	30	5A to 5B	4+50
11	18	30	5A to 5B	14+30
12	18	50	5C to 5D	3+00
13	18	30	5C to 5D	7+20
14	18	30	5E to 5F	4+20
15	18	40	5E to 5F	12+40
16	18	30	5E to 5F	21+00
17	18	30	5L to 5M	7+60
18	18	30	5L to 5M	13+00
19	18	40	I2 to AA	0+00
20	18	30	I2 to AA	7+80
21	18	30	I2 to AA	10+70
22	18	30	6A to 6B	5+00
23	18	30	6A to 6B	10+00
24	18	40	7A to 7C	0+00
25	18	30	7A to 7C	1+50
26	18	40	7G to 7H	0+00

EXHIBIT "C"

CULVERT LIST

CULVERT NO.	DIAMETER (Inches)	LENGTH (Feet)	ROAD SEGMENT POINT TO POINT	STATION
27*	24 (14 gauge Aluminized Steel)	50	I1 to I2	47+00
28*	24 (14 gauge Aluminized Steel)	40	I1 to I2	47+50
29*	36 (14 gauge Aluminized Steel)	60	I1 to I2	58+10
30	18	30	5D to 5L	4+50
31	18	30	I8 to I10	22+20
32	18	40	LV1 to LV2	1+60
33	18	40	LV1 to LV2	4+20
34	18	40	LV1 to LV2	16+90
35	18	40	LV1 to LV2	26+40
36*	24 (14 gauge Aluminized Steel)	60	LV1 to LV2	63+90
37	18	40	LV1 to LV2	66+60
38*	60 X 46 (12 gauge Aluminized Steel)	60	LV1 to LV2	95+00
39	18	40	LV1 to LV2	110+90
40*	54 (10 gauge Aluminized Steel)	74	LV3 to LV4	0+00
41*	54 (10 gauge Aluminized Steel)	86	LV5	0+00
42*	112 X 75 (12 gauge Aluminized Steel)	50	LV6	0+00

*Indicates culverts that do not require markers.

EXHIBIT "D"

ROCK PIT DEVELOPMENT AND USE

(1) PURCHASER shall conduct the operations relative to the disposal of waste material in such manner that silt, rock, debris, dirt, or clay shall not be washed, conveyed, or otherwise deposited in any stream. All waste shall be deposited at an approved "waste disposal site."

(2) PURCHASER shall prepare a written development plan for the pit area. The plan shall be submitted to STATE for approval prior to conducting any operation in the pit area. The plan shall include, but not be limited to:

(a) Location of benches and roads to benches.
(b) Disposal site for debris and overburden.
(c) Scheduling and coordination with other required quarry users.
(d) Time lines for rock quarry use.
(e) Erosion control measures.

(3) Proper winterzation and storm-water control measures such as waterbarring, drainage, utilization of filter bales, mulching and/or blocking access shall be constructed and maintained to protect the watershed and project work, as directed by STATE.

(4) The quarry floor shall be developed to provide for drainage away from the quarry. All quarry and stockpile site drainage ditches shall be maintained. Quarry access roads shall be cleared and blocked upon completion of quarry use as directed by STATE.

(5) Pit face shall be developed in a uniform manner.

(6) Benches shall be constructed at intervals of 40 feet or less in height and shall be a minimum of 20 feet in width. Any gravel or talus slopes shall be left with a working face at an angle of 60 degrees or less. There shall be a minimum of 1 bench with an access road to it. Said bench shall be easily accessible with tractors.

(7) Controlled blasting techniques are required, and shall be accomplished using timing devices, delayed charges, low intensity shots, or other suitable means to contain as much material as possible within the quarry development area.

(8) Oversized material that is produced or encountered during development at the Flagpole Ridge Quarry shall be broken down and utilized for crushing.

(9) All reject material shall be stockpiled at the Flagpole Ridge Waste Area. Reject materials shall be stockpiled in a manner which facilitates removal and loading with a standard front-end loader construction equipment, as shown on Exhibit D, page 2, and as directed by STATE.

(10) PURCHASER shall schedule and coordinate Flagpole Ridge Quarry and Stockpile use with Longview Fibre Company, P.O. Box 2323, Gearhart, Or 97138 (503) 717-8288.

(11) The pit site shall be left in a condition free from overburden and debris. Access roads to the pit, and the pit floor, shall be cleared at the termination of use. Overburden shall be removed for a distance of 20 feet beyond the developed rock source.

(12) PURCHASER shall provide and maintain a minimum 500 gallon fire truck, which meets FPA requirements during the debris burning phases of stockpile development activities at the Cougar Mountain Stockpile Site.

(13) PURCHASER shall schedule and coordinate rock quarry and stockpile use with other users and planned STATE contracts requiring quarry and/or stockpile use.

EXHIBIT "D"

ROCK PIT DEVELOPMENT AND USE

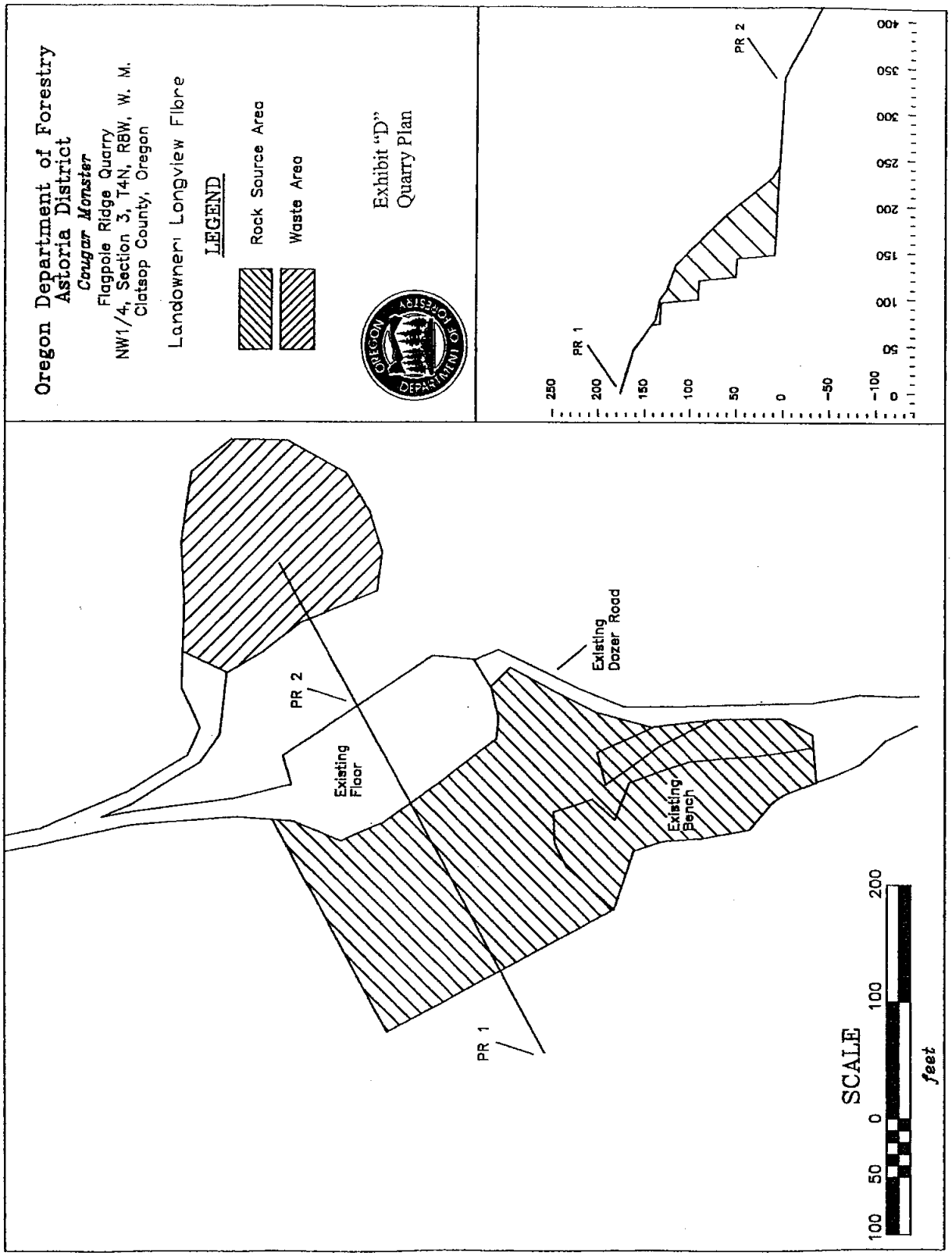

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EXHIBIT "E"

CRUSHED ROCK SPECIFICATIONS

Materials. The material shall be fragments of rock or other hard, durable particles crushed to the required size and a filler of finely crushed stone, sand, or other finely divided mineral matter. The material shall be free from vegetation and lumps of clay. Prior to entering the rock crusher, materials used for rock crushing shall be screened, and all materials less than one inch in size shall be rejected.

Quality and Grading Requirements. The stone base materials shall be crushed rock, including sand. River gravel shall not be used.

The material from which base material is produced or manufactured shall conform to the general requirements of Section 2630 of the "Standard Specifications for Highway Construction" prepared by the Highway Division, Oregon Department of Transportation, and shall meet the following test requirements:

Hardness - Test Method AASHTO T 96 35% Maximum

Durability - Test Method OSHD Standard
Passing No. 20 Sieve: 30% Maximum
Sediment Height: 3" Maximum

For ¾"-0"	Passing	1" sieve	100%
	Passing	3/4" sieve	90-100%
	Passing	3/8" sieve	55-75%
	Passing	1/4" sieve	40-60%

Of the fraction passing 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.

For 1½"-0"	Passing	2" sieve	100%
	Passing	1½" sieve	95-100%
	Passing	3/4" sieve	60-85%
	Passing	1/4" sieve	35-50%

Of the fraction passing 1/4" sieve, 40% to 60% shall pass the No. 10 sieve.

For 4"-0"	Passing	5" sieve	100%
	Passing	4" sieve	90-100%
	Passing	2" sieve	60-90%
	Passing	1/4" sieve	15-35%

The referenced sieve shall have square openings as set forth in AASHTO M 92, Woven Cloth Series. The determinations of size and gradings shall be as set forth in AASHTO T 27.

PIT-RUN AND RIPRAP ROCK SPECIFICATIONS

For 6"-0" Pit-Run	Passing	10" sieve	100%
	Passing	6" sieve	65%

For 24"-6" Riprap A minimum of 50 percent of the material shall measure a minimum of 24 inches, measured in one dimension. Material shall be clean, well graded, and free of 2"-0" fines.

Control of gradation shall be by visual inspection by STATE.

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EXHIBIT "F"

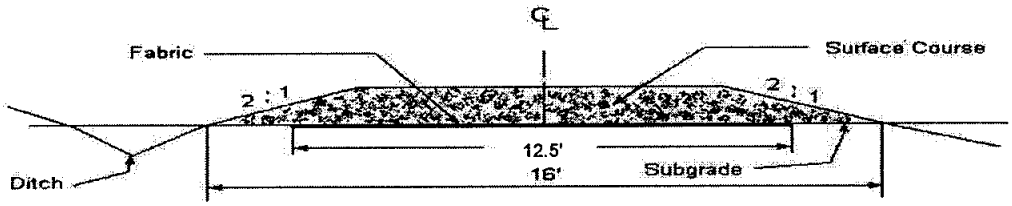
FABRIC SPECIFICATIONS

FABRIC SPECIFICATIONS - shall be woven fabric designed for forest road subgrade surfacing purposes and shall meet or exceed the following requirements, unless otherwise approved in writing by STATE:

(1)	Grab Tensile	300 lbs.	ASTM D1682
(2)	Modulus Load at 10% Elongation	140 lbs.	ASTM D1682
(3)	Mullen Burst	600 lbs.	ASTM D751
(4)	Width – 12.5 feet		

INSTALLATION REQUIREMENTS - fabric shall be installed according to the following requirements:

(1) Typical cross section:



(2) Subgrade surface shall be leveled and smoothed to remove humps and depressions which exceed 6 inches in height and depth. Small pieces of woody debris shall be removed or pushed below subgrade surface. Light vegetation (grass, weeds, leaves, and fine woody debris) may be left in place.

(3) Fabric shall be installed directly on the prepared surface. Longitudinal and traverse joints shall be overlapped at least 3 feet.

(4) Surfacing course material shall be placed to the designated thickness in one lift and spread in the direction of fabric overlap. Hauling and spreading equipment shall not be operated on the fabric until the total thickness of surfacing course material is placed.

(5) Torn, punctured, or separated sections of the fabric shall be repaired, by installing a fabric patch over the break prior to placing the surfacing course material. The patch shall be at least 4 feet larger in horizontal dimensions than the break to be repaired.

(6) Fabric failures resulting after rock placement and as evidenced by subgrade pumping or roadbed distortion shall be corrected. Correction measures shall consist of: (1) removing at least three-quarters the depth of surfacing course material in the affected area, (2) placing a fabric patch over the affected area with a minimum 4-foot overlap around the circumference of the area, and (3) replacing enough rock to cover the patch and blend in with the rest of the road.

(7) Should STATE determine that installation of fabric on roads or portions of roads is not necessary, PURCHASER shall deliver an equivalent amount of road fabric to STATE.

(8) Install fabric at the following locations: 5A to 5B, 5E to 5F, 5G to 5H, 5J to 5K, I2 to AA, and on all fill reconstruction subgrades.

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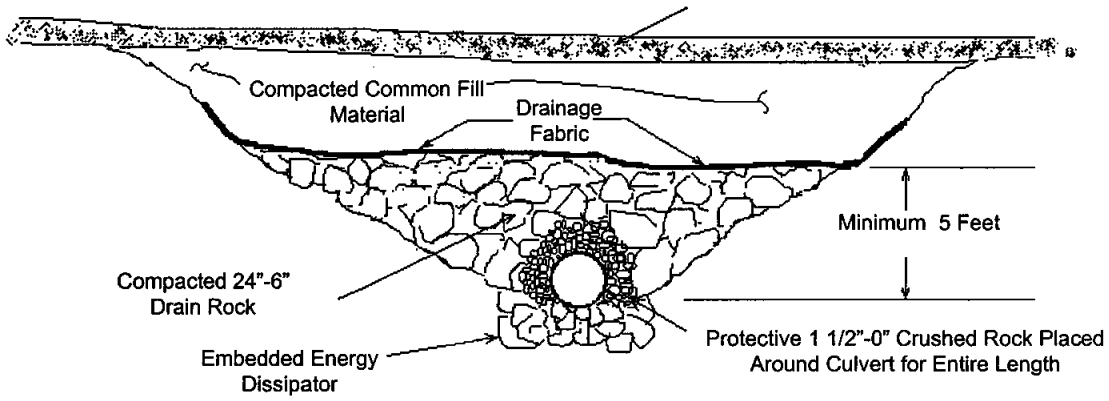
EXHIBIT "G"

FREE DRAINING FILL SPECIFICATIONS AND
EMBANKMENT DRAINAGE BLANKET SPECIFICATIONS



Drainage Blanket Construction:

(1) Excavate the drainage blanket trench to a width of three times the diameter of the culvert for the entire length of the embankment.

(2) Install the culvert in accordance with the plan, profile, and/or specifications.

(3) Install drainage fabric directly on the top of the constructed drainage blanket to provide for separation of the drain rock and common fill materials. Any longitudinal and/or traverse drainage fabric joints shall be overlapped at least 2 feet.

Drainage Fabric Specifications:

Nonwoven drainage fabric designed for subsurface drain purposes which meets or exceeds the following requirements:

		Test Method	Properties
(1)	Water Flow Rate	ASTM D 4491	85 gal/min/ft^2
(2)	Water Permeability	ASTM D 4491	0.30 cm/sec
(3)	Grab Tensile Strength	ASTM D 4632	250 lb
(4)	Mullen Burst Test	ASTM D 3766	460 lb
(5)	Mass	ASTM D 4533	10 oz/yd^2
(6)	Thickness	ASTM D 5199	100 mills
(7)	UV Resistance	ASTM D 4355 Xenon Arc	70% retained

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EXHIBIT "H"

TYPICAL EMBEDDED ENERGY DISSIPATOR

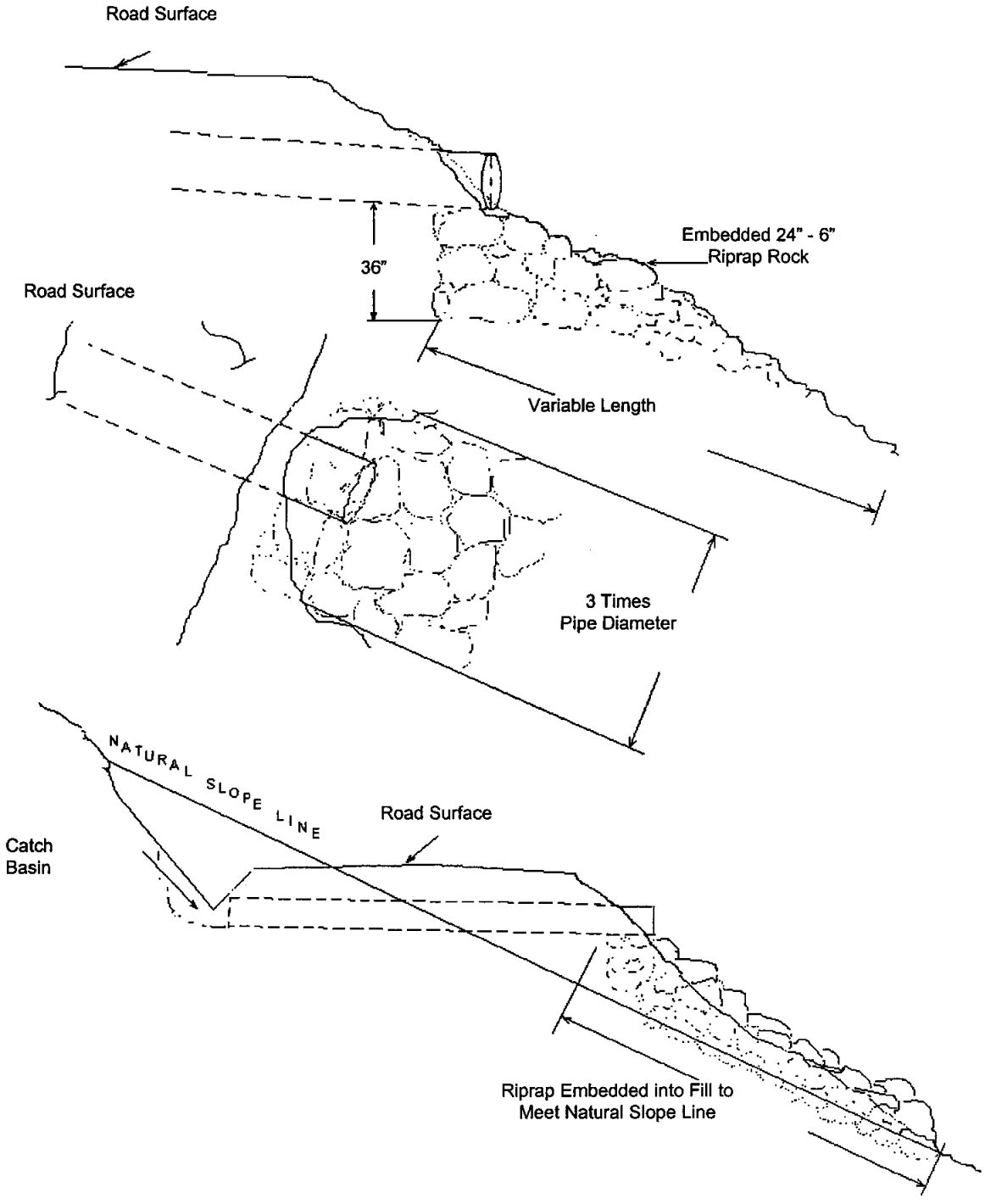

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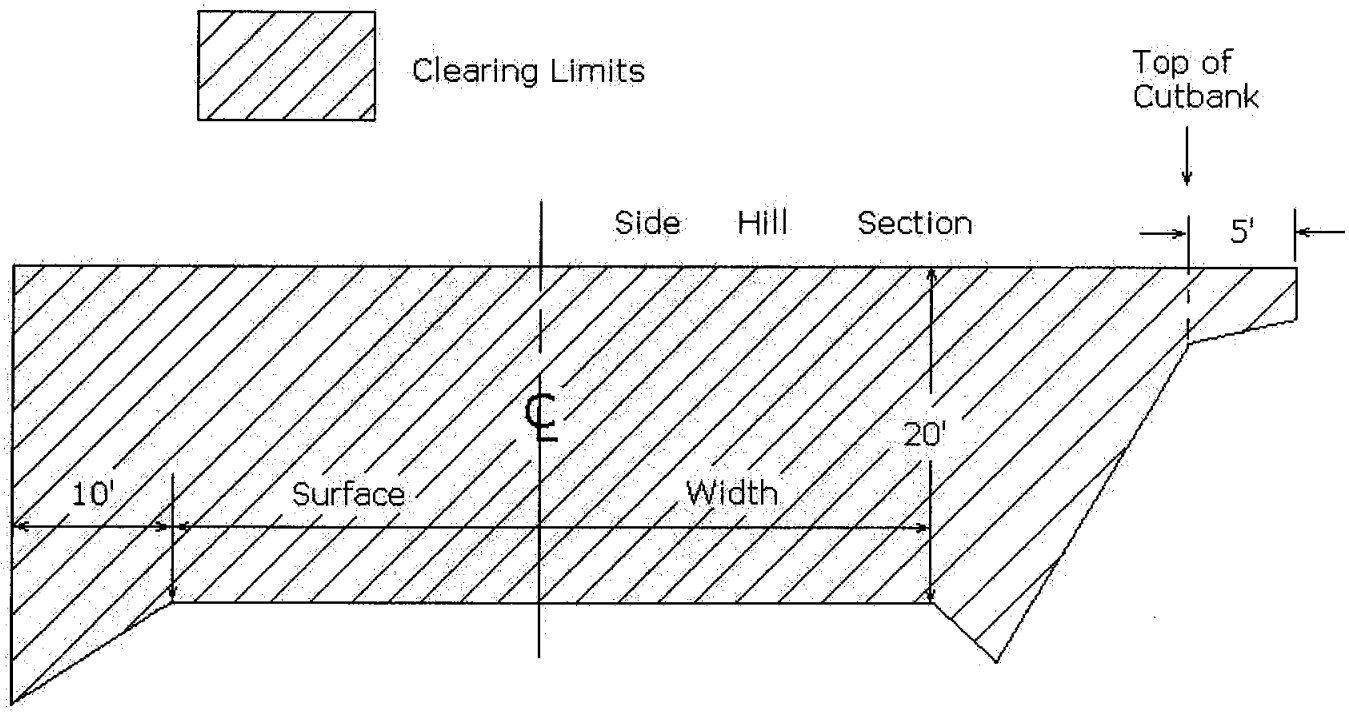
EXHIBIT "I"

LOGGING ROAD BRUSHING SPECIFICATIONS



REQUIREMENTS

Clear roadside brush between Points I1 to I2, I3 to 5A, 5D to 5L, and I8 to I10.

The minimum height of clearing shall be 20 feet, and the minimum width of clearing on the cutslope side of the road shall be 5 feet beyond the top of the cutbank.

Brush and trees shall be cut to a maximum height of 6 inches above the ground surface or obstructions such as rocks or existing stumps.

Debris resulting from the brushing operation shall be removed from the roadway, cutslope, ditches, and water courses and may be scattered downslope from the road or placed in other stable locations. Large debris, 6 inches or larger in diameter, shall be cut into lengths of 6 feet or less to facilitate rapid decay, unless otherwise approved by STATE.

Conifer trees larger than 6 inches in diameter at stump height, located within clearing limits but outside of the ditchline or shoulder, shall not be cut down, but shall be limbed for road visibility.

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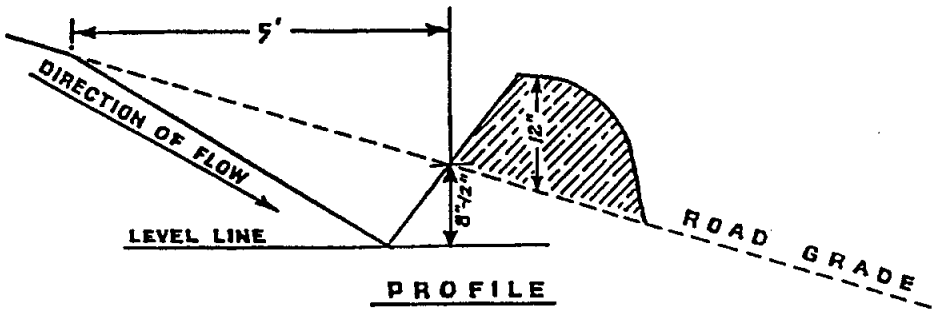
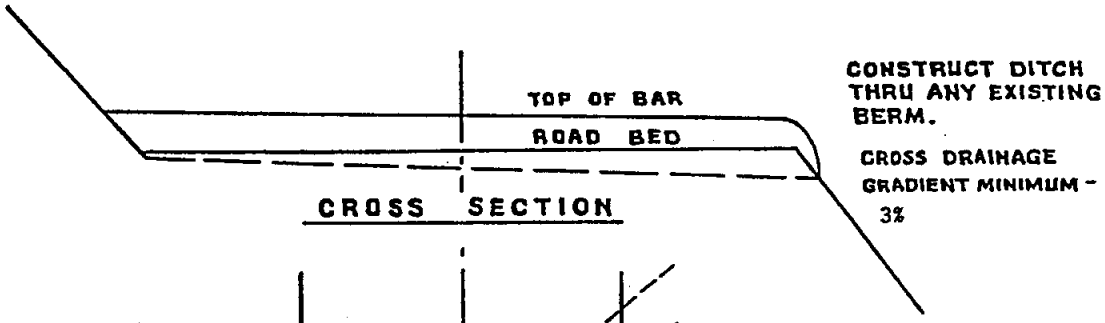
EXHIBIT "J"

WATERBAR SPECIFICATIONS



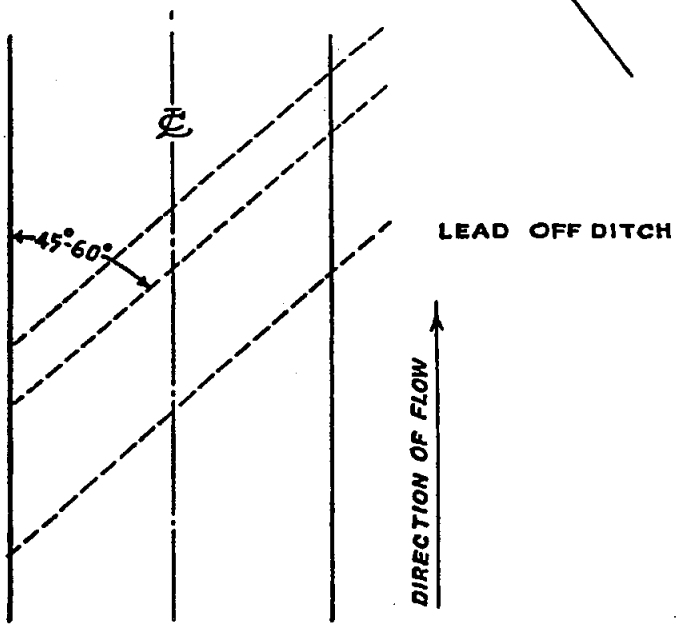
PROFILE



CROSS SECTION

SPACING OF WATERBARS

ROAD GRADE	DISTANCE
≤ 5%	400'
6-10%	200'
11-15%	150'
16-20% or greater	100'



PLAN VIEW

WATERBAR SPECIFICATIONS
FOR CROSS DITCHING #298

EXHIBIT "K"

ROAD VACATING SPECIFICATIONS

GENERAL SPECIFICATIONS

(1) Culvert Removal. Remove all drainage structures and culverts. Removed culverts shall be hauled to an approved refuse site off of State Land.

(2) Sidecast Pullback. Excavate/pullback previously sidecast materials below the road at designated locations. Developed slopes shall be pulled back to a 1½:1 slope or to natural ground contours. The beginning position for sidecast pullback shall be no greater than 20 feet vertical distance from the existing road surface, in accordance with the specifications in Exhibit K, page 3.

(3) Use of Excavated Materials.

(a) Sidecast Pullback. All excavated materials shall be placed on the interior (cut) side of the road, and utilized to restore the cutslope to natural contours or to a minimum 10% outsloped surface for drainage.

(b) Woody Debris and cut trees may be incorporated in embankment material and/or placed on the surface of compacted embankment material.

(4) Construct Waterbars at designated locations and a maximum of 100 foot intervals, and as directed by STATE. Construct waterbars according to the specifications in Exhibit J.

(5) Block Roads. Use excavated material to block roads from vehicle access at designated locations, as directed by STATE.

(6) Erosion Control. Erosion control efforts utilizing grass seed and mulch application shall be completed in a progressive manner. Grass seed and mulch shall be applied for every 500 feet of road vacated, prior to continuing work.

(a) Sidecast Pullback. Seed and mulch all excavated material and bare soil in accordance with the specifications in Exhibit L.

(b) Fill Removals. Seed and mulch all excavated material and bare soil in accordance with the specifications in Exhibit L.

(7) Equipment. Minimum 1½ cubic-yard, track mounted excavators shall be used for all excavation, sidecast pullback, fill removal, culvert removal, streambed preparation, road blocking, and waterbarring, unless otherwise approved in writing by STATE. All work shall be performed during dry conditions acceptable to STATE.

EXHIBIT "K"

ROAD VACATING SPECIFICATIONS

SPECIFIC INSTRUCTIONS/SPECIFICATIONS

Point	Station	Work Description
V1 to V2	0+00	Begin sidecast pullback.
	7+80	End sidecast pullback.
V3 to V4	0+00	Block road.
	9+50	Remove culvert.
	15+85	Remove culvert.
	25+50	Remove culvert.
5D to AA	0+00	Block road. Begin removal of culverts.
	15+80	Block road. End removal of culverts.

EXHIBIT "K"

TYPICAL CROSS SECTION VIEW OF ROAD VACATING SIDECAST PULLBACK

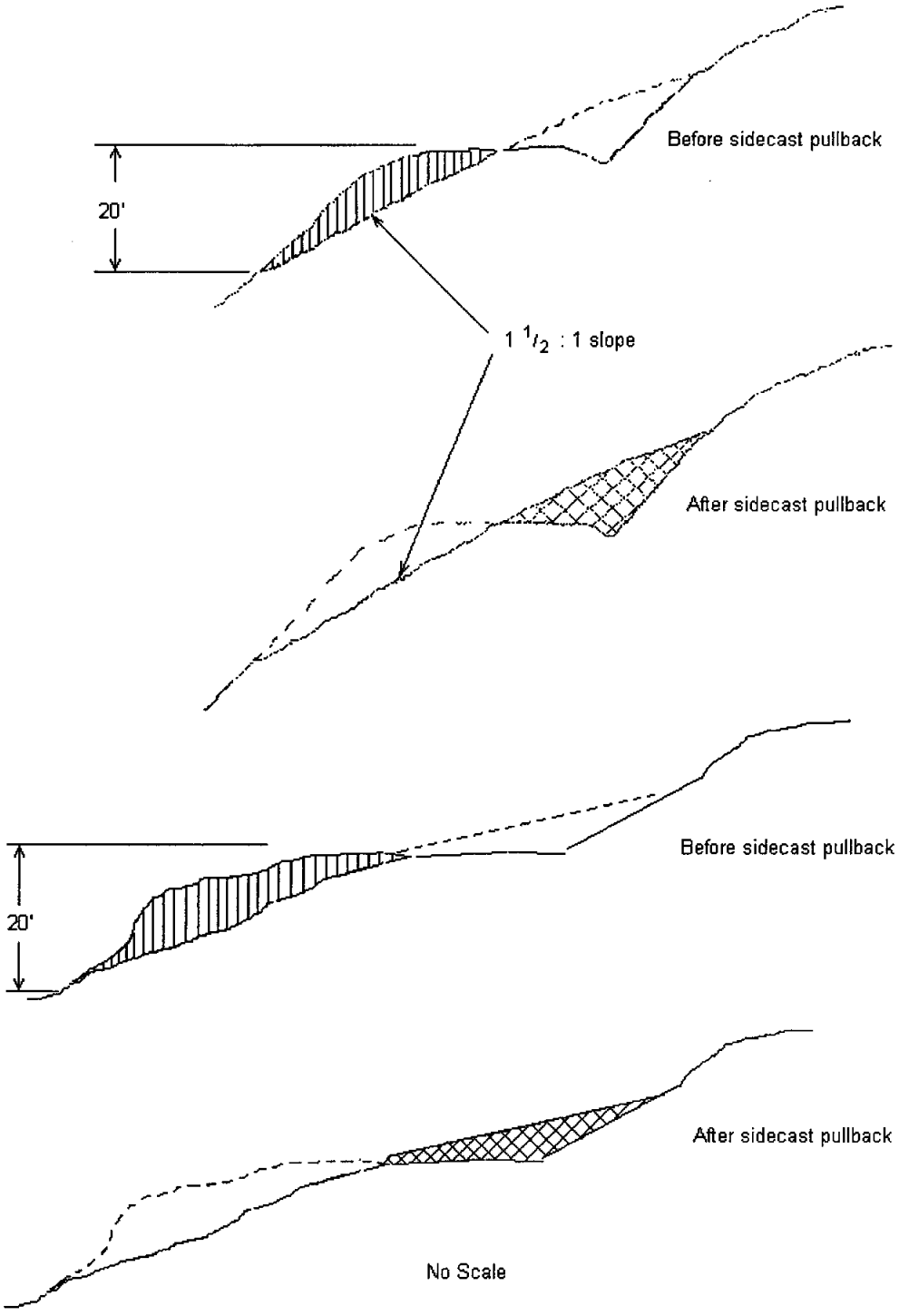


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EXHIBIT "L"

GRASS SEEDING AND MULCHING

This work shall consist of furnishing and placing required grass seed and straw mulch.

Seeding Seasons. Seeding shall be performed only from March 1 through June 15 and August 15 through October 31. Seeding materials shall not be applied during windy weather or when the ground is excessively wet or frozen. Work shall be performed during each specified seeding season on all completed and previously untreated sections. PURCHASER shall notify STATE 24 hours prior to seeding.

Application Methods for Grass Seed

Dry Method. Hand-operated seeding devices may be used when seed is applied in dry form.

Application Rates for Seed

Seed listed below shall be applied at the following rate per acre: 100 lbs.

SPECIES	MIXTURE	PURE LIVE SEED	POISON AND/OR REPELLENT	GERMINATION
Annual Rye	33%	95%	0	>90%
Orchard Grass	33%	95%	0	>90%
Perennial Rye	34%	95%	0	>90%

Seeding and Mulching. Apply grass seed and straw mulch to all waste areas, and bare soils resulting from Project Nos. 2, 3, 5, and 6. Applied straw mulch shall be a minimum of 2 inches deep and provide a uniform cover.

EXHIBIT "M"

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Description of Work to be Done

Areas designated for work under the contract shall be treated according to the specifications given below:

Clearing - Brush, logging slash, and other debris shall be cleared from planting sites and piled in windrows or piled so that 80 percent or more of the soil organic layer is exposed. All woody vegetation (other than conifer trees) is defined as brush in this exhibit.

Piles - shall be located at least 75 feet apart and shall be no more than 75 feet long. Piles shall be located inside the project area designated for piling and shall be more than 75 feet from any edge or standing conifer tree. Piles shall be built to a height of 3 to 4 feet and then covered to prevent water from reaching the slash. STATE shall supply the materials used for covering the slash. Additional woody debris shall be piled on top of the covered piles to complete the piling, as directed by STATE. Logs and chunks which are suitable for firewood shall be piled separately from slash, near roads and landings and alongside the road in locations designated by STATE.

Conifer Trees - shall be saved, unless otherwise directed by STATE.

Skid Trails - shall be ripped to a depth of 12 inches.

Protective Measures - shall comply with Oregon Forest Practice Rules issued per ORS 527.610 to 527.992. Examples of protective measures are: (1) waterbarring tractor trails where necessary to prevent runoff toward streams; (2) not windrowing in streams or streamways; and (3) leaving stream buffers along designated streams.

Work specifications may be modified or waived only upon written notice from STATE.

EXHIBIT "M"

SPECIFICATIONS FOR BRUSH AND SLASH SHOVEL PILING

Equipment Type, Equipment Operation, and Conduct of Work

The specifications given below are requirements for equipment type, equipment operation, and conduct of work under the contract.

Shovel - shall be a track-mounted machine with a ground-pressure rating of not more than 6.8 PSI and a net horsepower of 85 or more. The machine shall be capable of a minimum horizontal reach of 26 feet and a minimum vertical reach of 16 feet.

- Excavator-Shovel: Bucket shall be a hydraulically controlled, 4 to 5-foot wide, "clamshell-style bucket with rake arms," with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless otherwise approved in writing by STATE. "Clamshell-style bucket with rake arms" shall be hydraulically controlled to operate bucket in a horizontal position (**fixed position: positive control**) for piling slash.
- Log Loader – Shovel: Bucket shall be a hydraulically controlled, 4 to 5 foot wide, "clamshell-style bucket with rake arms," with a 360-degree continuous rotation, and tooth length on rake arm shall be greater than 14 inches long, unless other wise approved in writing by STATE. "Clamshell-style bucket with rake arms" shall be hydraulically controlled to operate bucket in a vertical position (**free swinging**) for piling slash.

Equipment	Rate	Hours	Appraised Value
Excavator	$ 95.00 / hour	227	$21,565.00
Log Loader	$ 70.00 / hour	308.1	$21,565.00

Operator - must be experienced in operating similar equipment on land clearing operations, be able to operate the equipment proficiently, and pile the debris on the area as directed by STATE.

Support - including transport, other equipment, replacements, supplies, maintenance, and repairs shall be furnished as required to complete work; and shall be furnished without cost to STATE, other than as agreed under the contract terms.

Work Scheduling - work shall be accomplished only during dry weather conditions, and started within 14 calendar days after completion of yarding activities on Area 1. Operations shall provide for continual operation until contract work is completed, unless interrupted by poor weather, fire closures, or other uncontrollable circumstances. Equipment breakdowns shall be repaired without undue delay, and provision shall be made for replacement of equipment to prevent prolonged delays. Piling operation shall not be allowed when operations might damage sites or affect stream flows. Any exception to these instructions must be authorized in writing by STATE.

STATE Representative - shall provide directions for the conduct of work according to specifications.

FORM 629.343-307
Rev. 3/01

EXHIBIT "N"
OREGON DEPARTMENT OF FORESTRY

SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

(1) ORIGINAL REGISTRATION ☐ Date _____
REVISION NUMBER _____ ☐ Date _____
CANCELLATION ☐ Date _____

(2) TO: _____
(Third Party Scaling Organization)

(3) FROM: Astoria Phone (503) 325-5451
(State Forestry District)
Address 92219 Hwy. 202, Astoria, OR 97103

(4) PURCHASER: _____
Address _____

(5) MINIMUM SCALING SPECIFICATIONS			CLASS		
SPECIES	SCALING DIAMETER INCHES	*NET SCALE VOLUME	PER MBF	** SUM	SUB
Conifers	--	10	X		
Hardwoods	--	10	X		

* Apply minimum volume test to whole logs over 40' Westside; 20' Eastside.
** Sum (if indicated): see instructions and explain in Item (20).

	YES	NO
(6) WESTSIDE SCALE: Actual taper all logs over 40' scaling length	☒	☐
(7) EASTSIDE SCALE: *Actual taper butt logs over 40' scaling length	☐	☒
(8) PENCIL BUCK back to Minimum Scaling Diameter _____	☐	☒
(9) ADD-BACK VOLUME -- Deductions due to delay	☒	☐

(10) APPROVED SCALING LOCATIONS	Species	Yard	Truck

(11) NOTICE OF CANCELLATION OF BRAND:
Effective Date: _____

_____
State Forester's Representative

(12) SALE NAME Cougar Monster
COUNTY Clastop

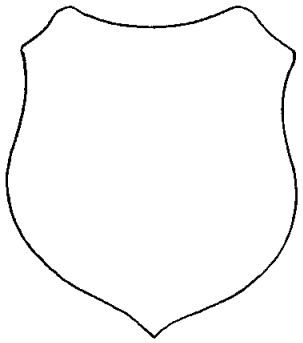
(13) STATE CONTRACT NUMBER 341-03-75

(14) SCALE: westside ☒ eastside ☐ cubic foot ☐

(15) STATE BRAND REGISTRATION NUMBER _____

(16) BUREAU BRAND CODE NUMBER _____

(17) STATE BRAND INFORMATION:
(COMPLETE)



(18) PAINT REQUIRED: YES ☒
COLOR Orange

(19) SPECIAL SCALES
PEELABLE CULL (all species)
UTILITY/PULP (all species)
NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE
OTHER: _____
OTHER: _____

(20) REMARKS: _____

Operator's Name (Optional inclusion by District): _____

(21) SIGNATURES:

_____
Purchaser or Authorized Representative Date

_____
State Forester Representative Date

Distribution: ORIGINAL: Salem / COPIES: TPSO (4), Purchaser, Operator, District, Sunset Unit

EXHIBIT "N"

INSTRUCTIONS FOR FORM 343-307 (rev. 5/01)

(1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires Item (21). Complete date.

(2) Designate Third Party Scaling Organization (TPSO). Send 4 copies to TPSO, 1 to purchaser, 1 to Salem, and keep such copies as to district needs.

(3) State District office, address and phone.

(4) Enter Purchaser's business name and address as it appears on the contract.

(5) Minimum Scaling Specifications. Review Section 45, "Log Removal," of the contract. Species, or combined species can be separate entries. Information serves as a basis for scaling (see also Items (13) thru (17)), and is required to show existence on the sale. **PerM** (per mbf). **SUM** (lump sum material). **SUB** (submerchantable material. SUB, as used by the State, references that material containing at least 10 bf (net) but less than the lower merchantable net volume limit or grade requirements for other merchantable (PerM) entries. PerM, SUM, and SUB must be indicated by checking the appropriate column. Species with the same specifications and value are combined into one entry. PerM and SUB require scaling therefore complete specifications. SUM need not be scaled, hence no specifications. Loads containing only SUM are to be ticketed if so instructed in Item (19). Mixed loads of SUM, PERM and/or SUB species will always be scaled.

(6) Westside -- actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Westside).

(7) Eastside -- actual taper/taper table segment scale. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Eastside). Items with * follow U.S. Forest Service Eastside rules.

(8) Pencil Buck. Check NO if a westside sale, optional for eastside sales.

(9) Add-Back Volume. Add-Back is normally checked YES. Scaler records deductions (sap rot, weather checks, etc.) caused by an abnormal delay in removal. Enter separately on scale ticket. TPSO provides State with summaries that include this as a net volume by species. Salvage sales and certain other circumstances may require that "NO" be checked.

(10) Show scaling locations only applicable to TPSO. Not necessary to list markets. If all species are scaled at same location, enter "ALL."

(11) When logging is complete, recall branding hammers, date and sign where indicated, check CANCELLATION box at top of form, and send to TPSO.

(12) Enter sale name and county.

(13) Enter sale contract number.

(14) Check Westside or Eastside log scale. Cubic foot refers to Northwest Log Rules Cubic Foot Scale.

(15) Oregon Forest Products Brand Registry Number (optional).

(16) DO NOT USE -- TPSO will fill in when applicable.

(17) Show one brand only. Complete drawing. If more than one brand is assigned to the sale, (1) make separate form for each brand, and (2) on each form, explain and show other brand(s) under REMARKS, Item 19.

(18) Check YES and designate orange.

(19) Special Scales. These are the Special Scales that will be applied. If "Other" is indicated, please describe. Give comments in Item (19).

(20) Use this space to designate weight conversion factors, or any other explanations to clarify scaling requirements. If additional scaling locations are approved, prepare another form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.

(21) Require purchaser to sign and date completed form.